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| 09/994,724 | 11/28/2001 | Shinichi Sato | 35.C15977 | 8317 |

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| EXAMINER | |
|---|---|
| NGHIEM, MICHAEL P | |

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| 2861 | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

RL

| SUPPLEMENTAL Offic Action Summary | Application No. 09/994,724 | Applicant(s) SATO ET AL. | |
|---|---|---|---|
| | Examiner Michael P Nghiem | Art Unit 2861 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-33 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 28 January 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

Pursuant to a telephone interview with Mr. Michael O'Neill on May 15, 2002, this supplemental Office Action is submitted to replace the Office Action filed April 11, 2002 and to further address the prior art rejections of claims 15-18.

### *Specification*

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

"Comprises" and "means" are improper.

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

Correction of the following is required:

Claim 18, "... a suction pump to reduce pressure ... through the air outlet" is not supported by the specification. Fig. 12 shows pump (B304) reducing pressure through suction port (B123) and not through air outlet (B410).

***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the spring (page 17, line 23) and the opening 120 (page 24, line 16) as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP 608.02(d). Correction is required.

***Claim Objections***

4. Claims 10, 17, and 32 are objected to because of the following informalities:

- claim 10, line 3, after "container" should insert – to the --.
- claim 17, line 5, "unit" should be deleted.
- claim 32, line 3, before "separating membrane" should insert – gas-liquid --.

Appropriate correction is required.

***Claim R jections - 35 USC § 112***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-31 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1, 15, 19, 25, 26, and 31, it is not understood how the air outlet can be used for making the ink container under negative pressure.

The remaining claims are also rejected under 35 U.S.C. 112, first paragraph, for being dependent upon a rejected base claim.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12, 14, 15-18, 32, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12, how can the surface tension be at 28 mN/m (claim 1) and at 35 mN/m?

Claim 14, the ink outlet lacks antecedent basis.

Claim 15 is in a Jepson type format without an improvement.

Claim 15, the ink supply device cannot be in itself.

Claim 32 does not have a transitional phrase.

The remaining claims are also rejected under 35 U.S.C. 112, second paragraph, for being dependent upon a rejected base claim.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6, 12, 15, 16, and 18-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lorenze et al. (US 5,663,754) in view of Koitabashi et al. (US 5,509,140).

Lorenze et al. discloses the following claimed features of the invention:

- an ink tank (22) for an ink-jet printing apparatus (Fig. 1) and method of introducing an ink to the ink tank (Fig. 2) comprising:

- an ink container (container of 22) containing an ink;

- an ink inlet (26) for introducing an ink to the ink container (Fig. 2); and

- an air outlet (54) for making the ink container under negative pressure in cooperation with the ink-jet printing apparatus (Fig. 2), an ink being introduced to the ink container through the ink inlet (ink enters 22 via 26, Fig. 2) when negative pressure is applied to the ink container (via 54), wherein the ink tank further comprises gas-liquid separation means (57, 58) which does not pass liquid but gas at the air outlet (column 3, lines 50-54);

- the gas-liquid separation means comprises a porous material (58 of gortex material, column 3, lines 51-52);

- the porous material is a porous resin material (feature of gortex);

- the porous resin material is a tetrafluoroethylene resin (feature of gortex);

- the porous material is selected from the group consisting of unglazed porcelain, earthenware and ceramics (feature of gortex);

- the ink tank contains an ink absorbing member (23) capable of absorbing and holding the ink in the ink container;

- a second ink tank (46) for storing the ink to be introduced to the ink container of the first ink tank;

- means (44, 48) for connecting the second ink tank with the ink inlet of the first ink tank;

- means for reducing a pressure (60, 66, 56) in the ink container of the first ink tank through the air outlet of the first ink tank when the second ink tank is connected to the ink inlet of the first tank (Fig. 2);

- the connection means comprises an ink supply path (70) communicated to the second ink tank, and a joint (48) at an end of the ink supply path, the joint being connectable to the ink inlet of the first ink tank (Fig. 2);

- the pressure reducing means comprises a suction pump (60) to reduce a pressure in the ink container through the air outlet;

- the ink comprising a coloring material, a liquid medium (features of ink);

- the ink is an ink-jet ink (Abstract, lines 1-2);

- stopping ink supply to the ink container when an ink level in the ink container has reached to the gas-liquid separation means (via 58).

However, Lorenze et al. does not disclose the following claimed features:
- the ink has surface tension of 28 mN/m or higher but not higher than 50 mN/m;
- a content of the surfactant in ink is higher than 0.05 wt %.

Nevertheless, Koitabashi et al. discloses that the ink has surface tension of 28 mN/m or higher but not higher than 50 mN/m (column 35, lines 45-46) and a content of the surfactant is higher than 0.05 wt % (column 34, lines 44-47) for the purpose of improving the permeability of ink.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Lorenze et al. with the surface tension and content of surfactant of ink as disclosed by Koitabashi et al. for the purpose of improving the permeability of ink.

Even though Lorenze et al. as modified does not disclose the functional limitations of the ink-jet ink not deteriorating a gas-liquid separating function of a gas-liquid separating membrane when the ink contacts the separating membrane, wherein the ink does not easily form a meniscus in a pore of the gas-liquid separating membrane, the ink of the claimed invention is not distinguished from the ink of prior art. It has been held that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danley, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a device is, not what a device does ."(emphasis in original) Hewlett - Packard Co . v. Bausch & Lomb Inc ., 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

Claims 1-7 and 10-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen (US 4,968,998) in view of Lorenze et al. and Koitabashi et al..

Allen discloses the following claimed features of the invention:

- an ink supply device (Fig. 3) comprising:

- an ink cartridge (Fig. 4) comprising an ink tank (10) for an ink-jet printing apparatus (Fig. 3) and an ink-jet recording head (12) for ejecting the ink in the ink tank, wherein the ink-jet recording head is connected to the ink outlet of the ink tank (Fig. 4), said ink tank (10) comprising:

- an ink container (14) containing an ink;

- an ink inlet (36) for introducing an ink to the ink container (Fig. 2);

- an air outlet (30) for making the ink container under negative pressure in cooperation with the ink-jet printing apparatus (Fig. 4), an ink being introduced to the ink container through the ink inlet (ink enters 36, Fig. 4) when negative pressure is applied to the ink container (via 78);

- the ink tank contains an ink absorbing member (20) capable of absorbing and holding the ink in the ink container (Fig. 2);

- the ink tank has a space (space between top wall of 10 and 20) between the gas-liquid separation means and the ink absorbing member (Fig. 2);

- the ink tank further comprises an ink outlet (16) for discharging the ink in the ink container outside;

- an ink-jet recording head (12) capable of ejecting the ink is connected to the ink outlet (Fig. 2);

- a second ink tank (70) for storing the ink to be introduced to the ink container of the first ink tank;

- means (74, 66) for connecting the second ink tank with the ink inlet of the first ink tank;

- means for reducing a pressure (68, 78, 76) in the ink container of the first ink tank through the air outlet of the first ink tank when the second ink tank is connected to the ink inlet of the first tank (Fig. 4);

- the connection means comprises an ink supply path (74) communicated to the second ink tank, and a joint (66) at an end of the ink supply path, the joint being connectable to the ink inlet of the first ink tank (Fig. 4);

- the ink inlet of the first ink tank is provided with a hollow needle (28), and the ink is introduced from the second ink tank to the ink container through the needle and wherein the joint unit connects to the needle (Figs. 2, 4);

- the pressure reducing means comprises a suction pump (76) to reduce a pressure in the ink container through the air outlet (Fig. 4).

However, Allen does not disclose the following claimed features of the invention:

- gas-liquid separation means which does not pass liquid but gas at the air outlet, wherein the ink has surface tension of 28 mN/m or higher but not higher than 50 mN/m;

- the gas-liquid separation means comprises a porous material;

- the porous material is a porous resin material;

- the porous resin material is a tetrafluoroethylene resin;

- the porous material is selected from the group consisting of unglazed porcelain, earthenware and ceramics.

Nevertheless, Lorenze et al. discloses gas-liquid separation means (57, 58) comprising the claimed porous materials (features of gortex material 58, column 3, lines 51-52) for the purpose of allowing gas but not liquid to pass through at an air outlet (54) (column 3, lines 50-54), while

Koitabashi et al. discloses that the ink has surface tension of 28 mN/m or higher but not higher than 50 mN/m (column 35, lines 45-46) for the purpose of improving ink permeability.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Allen with gas-liquid separation means and surface tension of ink as disclosed by Lorenze et al. and Koitabashi et al. for the purposes of allowing gas but not liquid to pass through at air outlet and improving the permeability of ink.

***Contact Information***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (703) 306-3445. The examiner can normally be reached on M-H from 6:30AM – 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached at (703) 308-3126. The fax phone numbers for

the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

MICHAEL NGHIEM
PRIMARY EXAMINER

Michael Nghiem

May 15, 2002